AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A magnetic trip unit for actuating a latching mechanism to trip a circuit breaker upon an overcurrent condition, the magnetic trip unit including:

a first electrically conductive strap configured to conduct an electrical current;

a first magnet yoke disposed proximate to said first electrically conductive strap, said first magnet yoke comprising inwardly extended flanges defining a gap "z" therebetween; and

a first armature pivotally disposed proximate to and adjustable to define a first and a second distance "L" from said inwardly extended flanges of said first magnetic yoke; said first armature being in operable communication with the latching mechanism; said first armature and said first magnet yoke providing a magnetic path therebetween; said magnetic path therebetween consisting of spaced apart facing surfaces of each of said first armature and said first magnet yoke; said magnetic path therebetween having a reluctance to magnetic flux; said reluctance is adjusted to prevent saturation of said magnetic flux when said current through said strap is a first number (X) times a rated current of the circuit breaker and said reluctance is adjusted to promote saturation of said magnetic flux when said current through said strap is a second number (Y) times said rated current of the circuit breaker; wherein said first number is a number smaller than said second number;

wherein in response to a first current through said strap being about 3 times a rated current of the circuit breaker, and said first distance "L" being less than said gap "z", a first magnetic torque is developed at said first armature;

wherein in response to said first current through said strap, and said second distance "L" being greater than said gap "z", a second magnetic torque is developed at said first armature; and

wherein said first magnetic torque is equal to or greater than about 3 times said second magnetic torque.

2. (Original) The magnetic trip unit of claim 1, wherein said reluctance is adjusted by setting a length of said magnetic path to prevent saturation of said magnetic flux when said current through said strap is said first number times a rated current of the circuit breaker and said length generally saturates with said magnetic flux when said current through said strap is said second number times said rated current of the circuit breaker.

3. (canceled)

4. (Original) The magnetic trip unit of claim 1, wherein said reluctance includes a cross sectional area of said magnetic path to prevent saturation of said magnetic flux when said current through said strap is said first number times a rated current of the circuit breaker and said cross sectional area generally saturates with said magnetic flux when said current through said strap is said second number times said rated current of the circuit breaker.

5. (canceled)

6. (Original) The magnetic trip unit of claim 1, wherein said reluctance allows a flux density below a saturation flux density at said first number times said rated current.

7. (Original) The magnetic trip unit of claim 1, wherein said reluctance allows increases in said magnetic flux across said magnetic path without saturating when said current through said strap is said first number times said rated current and said magnetic flux approaches saturation as said current through said strap increases towards said second number times said rated current.

8. (canceled)

9. (Original) The magnetic trip unit of claim 1, wherein said first magnetic yoke includes a metal plate comprising a U-shaped bight.

10. (currently amended) The magnetic trip unit of claim 9, wherein said U-shaped bight includes ~~a pair of~~ said inwardly extending flanges extending from opposite ends of said U-shaped bight; said ~~and a~~ gap "z" disposed between said flanges; said gap "z" being spaced for maximum flux egress from side edges of said flanges to said first armature; said flanges being arranged to generate a magnetic flux within said plate in response to said current through said first electrically conductive strap.

11. (Original) The magnetic trip unit of claim 10, wherein said gap is larger than a first distance separating said first armature and said first magnet yoke; said first distance provides less said reluctance for said magnetic flux than said gap.

12. (Original) The magnetic trip unit of claim 11, wherein said first armature is positioned at said first distance from said magnet yoke when the circuit breaker trips at said X times said rated current.

13. (Original) The magnetic trip unit of claim 10, wherein said gap is smaller than a second distance separating said first armature and said first magnet yoke; said second distance provides more said reluctance for said magnetic flux than said gap.

14. (Original) The magnetic trip unit of claim 13, wherein said armature is positioned at said second distance from said magnet yoke when the circuit breaker trips at said Y times said rated current.

15. (Original) The magnetic trip unit of claim 1, wherein said armature is attached to said first electrically conductive strap.

16-17. (canceled)

18. (currently amended) A circuit breaker including:

a first contact arm arranged between first and second electrically conductive straps;

a latching mechanism configured to move said first contact arm out of contact with said first and second electrically conductive straps;

a first magnet yoke disposed proximate to said first electrically conductive strap, said first magnet yoke comprising inwardly extended flanges that define a gap "z" therebetween; and

a first armature pivotally disposed proximate to and adjustable to define a first and a second distance "l," from said inwardly extended flanges of said first magnetic yoke; said first armature being in operable communication with the latching mechanism; said first armature and said first magnet yoke providing a magnetic path therebetween; said magnetic path therebetween consisting of spaced apart facing surfaces of each of said first armature and said first magnet yoke; said magnetic path therebetween having a reluctance to magnetic flux; said reluctance is adjusted to prevent saturation of said magnetic flux when said current through said strap is a first number (X) times a rated current of the circuit breaker and said reluctance is adjusted to promote saturation of said magnetic flux when said current through said strap is a second number (Y) times said rated current of the circuit breaker; wherein said first number is a number smaller than said second

number;

wherein in response to a first current through said strap being about 3 times a rated current of the circuit breaker, and said first distance "L" being less than said gap "z", a first magnetic torque is developed at said first armature;

wherein in response to said first current through said strap, and said second distance "L" being greater than said gap "z", a second magnetic torque is developed at said first armature; and

wherein said first magnetic torque is equal to or greater than about 3 times said second magnetic torque.

19. (Original) The circuit breaker of claim 18, wherein said reluctance is adjusted by setting a length of said magnetic path to prevent saturation of said magnetic flux when said current through said strap is said first number times a rated current of the circuit breaker and said length generally saturates with said magnetic flux when said current through said strap is said second number times said rated current of the circuit breaker.

20-22. (canceled)

23. (Original) The circuit breaker of claim 18, wherein said reluctance allows a flux density below a saturation flux density at said first number times said rated current.

24. (Original) The circuit breaker of claim 18, wherein said reluctance allows increases in said magnetic flux across said magnetic path without saturating when said current through said strap is said first number times said rated current and said magnetic flux approaches saturation as said current through said strap increases towards said second number times said rated current.

25. (canceled)

26. (Original) The circuit breaker of claim 18, wherein said first magnetic yoke includes a metal plate comprising a U-shaped bight.

27. (Original) The circuit breaker of claim 26, wherein said U-shaped bight includes a pair of flanges extending from opposite ends of said U-shaped bight and a gap between said flanges; said gap being spaced for maximum flux egress from side edges of said flanges to said first armature; said flanges being arranged to generate a magnetic flux within said plate in response to said current through said first electrically conductive strap.

28. (Original) The circuit breaker of claim 27, wherein said gap is larger than a first distance separating said first armature and said first magnet yoke; said first distance provides less said reluctance for said magnetic flux than said gap.

29. (Original) The circuit breaker of claim 28, wherein said first armature is positioned at said first distance from said magnet yoke when the circuit breaker trips at said X times said rated current.

30. (Original) The circuit breaker of claim 27, wherein said gap is smaller than a second distance separating said first armature and said first magnet yoke; said second distance provides more said reluctance for said magnetic flux than said gap.

31. (Original) The circuit breaker of claim 30, wherein said armature is positioned at said second distance from said magnet yoke when the circuit breaker trips at said Y times said rated current.

32. (Original) The circuit breaker of claim 18, wherein said armature is attached to said first electrically conductive strap.

33-38. (canceled)

39. (currently amended) A magnetic trip unit for actuating a latching mechanism to trip a circuit breaker upon an overcurrent condition, the magnetic trip unit including:

a first magnet yoke configured to conduct an electrical current, said first magnetic yoke configured as a U-shaped bight defined by flanges extending toward each other having a gap "z" therebetween; and

a first armature pivotally disposed proximate to said first magnetic yoke in operable communication with the latching mechanism, said first armature and said first magnet yoke adjustable for providing a magnetic path therebetween having a first distance "L" and a second distance "L" separating said first armature and said magnet yoke, said magnetic path therebetween consisting of spaced apart facing surfaces of each of said first armature and said first magnet yoke, said magnetic path therebetween having a reluctance to magnetic flux;

wherein in response to a first current through said strap being about 3 times a rated current of the circuit breaker, and said first distance "L" being less than said gap "z", a first magnetic torque is developed at said first armature;

wherein in response to said first current through said strap, and said second distance "L" being greater than said gap "z", a second magnetic torque is developed at said first armature; and

wherein said first magnetic torque is equal to or greater than about 3 times said second magnetic torque.

40. (Previously Presented) The magnetic trip unit of claim 39, wherein said gap "z" is larger than said first distance "L" separating said first armature and said first magnet yoke; said first distance provides less said reluctance for said magnetic flux than said gap.

41. (currently amended) The magnetic trip unit of claim 39, wherein said gap "z" is smaller than said ~~first~~ second distance "L" separating said first armature and said first magnet yoke; said second distance provides more said reluctance for said magnetic flux than said gap.

42. (new) The magnetic trip unit of Claim 1, wherein:

said first magnetic torque is equal to or greater than about 7 times said second magnetic torque.

43. (new) The magnetic trip unit of Claim 1, wherein:

in response to a second current through said strap being about 7.5 times the rated current of the circuit breaker, and said first distance "L" being less than said gap "z", a third magnetic torque is developed at said first armature;

in response to said second current through said strap, and said second distance "L" being greater than said gap "z", a fourth magnetic torque is developed at said first armature; and

said third magnetic torque is equal to or greater than about 6 times said fourth magnetic torque.

44. (new) The magnetic trip unit of Claim 43, wherein:

said third magnetic torque is equal to or greater than about 8 times said fourth magnetic torque.

45. (new) A magnetic trip unit for actuating a latching mechanism to trip a circuit breaker upon an overcurrent condition, the magnetic trip unit comprising:

an electrically conductive strap configured to conduct an electrical current;

a magnet yoke disposed proximate to said electrically conductive strap, said magnet yoke comprising inwardly extended flanges that define a gap "z" therebetween and that partially surround said electrically conductive strap; and

an armature pivotally disposed proximate to and adjustable to define a first and a second distance "L" from said inwardly extended flanges of said magnetic yoke; said armature being in operable communication with the latching mechanism;

wherein in response to a first current through said strap being about 3 times a rated current of the circuit breaker, and said first distance "L" being less than said gap "z", a first magnetic torque is developed at said armature;

wherein in response to said first current through said strap, and said second distance "L" being greater than said gap "z", a second magnetic torque is developed at said armature;

wherein said first magnetic torque is equal to or greater than about 3 times said second magnetic torque;

wherein in response to a second current through said strap being about 7.5 times the rated current of the circuit breaker, and said first distance "L" being less than said gap "z", a third magnetic torque is developed at said armature;

wherein in response to said second current through said strap, and said second distance "L" being greater than said gap "z", a fourth magnetic torque is developed at said armature; and

wherein said third magnetic torque is equal to or greater than about 6 times said fourth magnetic torque.

46. (new) The magnetic trip unit of Claim 45, wherein:

said third magnetic torque is greater than said first magnetic torque; and

said fourth magnetic torque is about equal to said second magnetic torque.